4.2.12. Introduction to Advanced Electro-Optical System Test Techniques

Most of the electro-optical test techniques presented here are inherently instrumentation and asset intensive. These requirements were discussed in the respective test sections. An attempt was still made to minimize the instrumentation requirements in these sections. On occasion, additional assets should be considered, as required. For instance, if the operator actions, BITs and system faults are available digitally, they can be recorded and analyzed as described in the Advanced Air-to-Air Radar Test Techniques section, 2.3.20.

In general, each of the tests can be better documented using a time stamped, video recording of the FLIR display. Video recording also allows the replay and analysis of the display in a more leisurely ground environment. In addition, the FLIR performance can change over the course of a flight. For instance, target temperature differentials with the ambient background will change over time due to the effects of the earth's heating and cooling. The display can be replayed and directly compared for changes. As mentioned above, operator actions can be time stamped and digitally recorded to further document each test. Many of the ground measurements are facilitated by using specially constructed grids for the various angular measurements described in the previous sections.

On occasion, a more thorough documentation and measurement of the IR characteristics of the mission relatable targets used for the airborne tests is required. This usually requires extensive, realtime measurements of the target and environmental temperatures as well as all target characteristics. Another technique is to use specially constructed and instrumented target models which precisely document the target characteristics and tend to be highly repeatable. As with all of the other tests described in this book, the judicious use of instrumentation and additional assets should be researched and considered when necessary. The appropriate, advanced reference documents described in Chapter 1 or an experienced tester should be consulted as necessary.